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## Poetry.

### THE VOICE OF THE PESTILENCE.

Breathless the course of the Pale White Horse,
Bearing the ghastly form :
Rapid and dark the spectre bark
When it sweeps before the storm,
Balefully bright through the torrid night
Ensanguined meteors glare ;
Fiercely the spires of volcanic fires
Stream on the sulphurious air !

Shades of the slain through the murder's brain
Flit terrible and drear ;
Shadowy and swift the black storm-drift
Doth trample the atmosphere !
But swifter than all, with darker pall
Of terror around my path,
I have risen from my lampless prison—
Slave of the high God's wrath !

A deep voice went from the firmament,
And it pierced the caves of earth ;
Therefore I came on my wings of flame
From the dark place of my birth !
And it is said : "Go forth from the South to the North
Over yon wandering ball ;
Sin is the King of that doomed thing,
And the sin-beguiled must fall !"

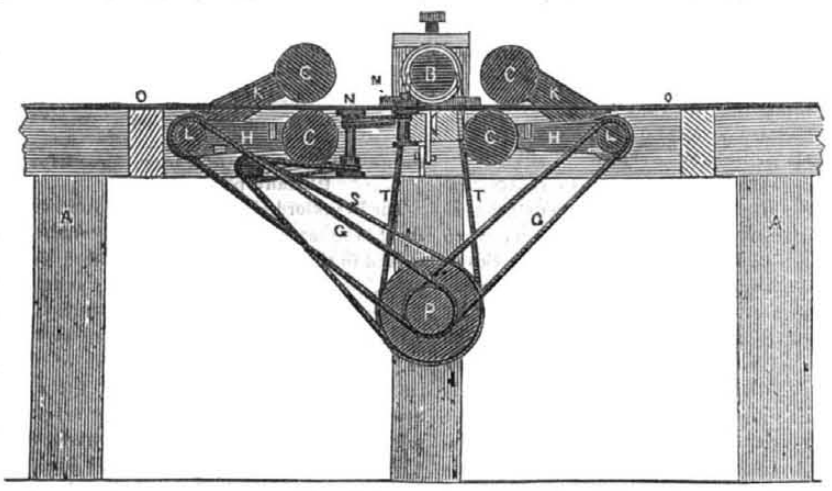
Forth from the gate of the Uncreate—
From the portals of the abyss ;
From the caverns dim where vague forms swim
And shapeless chaos is !
I come, I come ; before me are dumb
The nations, aghast for dread—
Lo ! I have past as the desert blast,
And the millions of earth lie died !

A voice of fear from the hemisphere
Tracketh me where I fly !
Earth weeping aloud for her widowhood—
A wild and desolate cry !
Thrones and dominions beneath my pinions
Cower like meanest things—
Melt from my presence the pride and pleasance
Of parlor-stricken Kings !
Sorrow and mourning supremely scorning,
My throne is the boundless air—
My chosen shroud is the dark plumed cloud,
Which the whirling breezes bear !

From tomb of the waters, athirst of slaughters,
I rose that thirst to sate ;
These green isles are graves in the waste of the waves
Their beauty is desolate.
Did I not pass the granite mass,
And the ridged Caucasian hill,
Over burning sands, over frost-chained lands,
Borne at my own wild will ?

Then hark to the beat of my hastening feet,
Thou shrined in the sea ;
Where are thy dreams that the ocean streams
Would be safety unto thee ?
Awaken ! awaken ! my wings are shaken
Athwart the troubled sky ;
Streams the red glance of my meteor lance,
And the glare of my eager eye !
Harken ! oh harken ! my coming shall darken
The light of thy festal cheer ;
In thy storm rocked home on the Northern foam
Nursling of Ocean—hear !

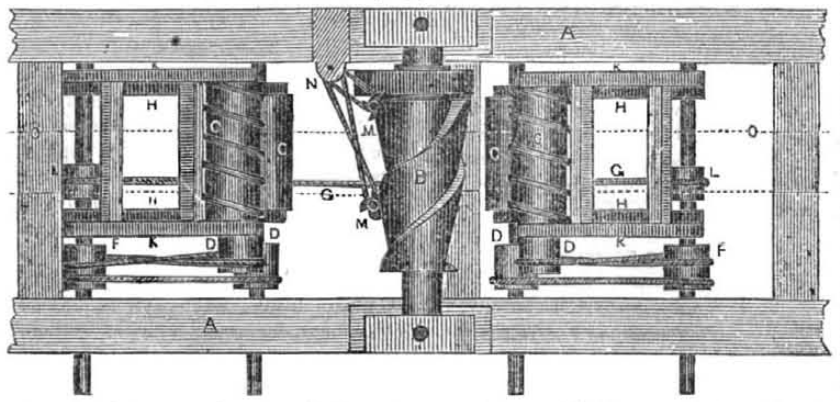
## SPIRAL PLANING MACHINE.---Figure 1.




This is a machine invented by Mr. Joseph E. Ware, of St. Louis, Missouri. The cutter is a screw of uniform pitch wrapped round a cylinder and the boards are fed in by breeding rollers. The tongueing and grooving is done at the one operation. Fig. 1, is a vertical section, and fig. 2 is a top view. The same letters refer to like parts on both figures.

A, is a stout frame. B, is the spiral cutter and cylinder. C C, are the feeding rollers.—They are formed like the breeding rollers of a calender. The upper feed roller is fixed upon a swing frame K, and is secured on an axis, so as it can be lifted up and laid back at pleasure. The lower feed roller is smooth and is immoveable, but fixed in a suspension frame H. The rollers on both sides of the knife are operated exactly alike. O O, represents a board going through the machine.—M M, are the tongueing and grooving cutters. They are spur knives secured on small vertical shafts. These cutters match the boards after they pass from under the planing operation, and they can be shifted by set screws on the transverse sleepers to which they are secured, to match different widths of boards.—The arrangement of the planing apparatus being now described, which will be plain to all, the pulleys and bands show how it is driven. Motion being communicated by any power to P, the main driving shaft ; bands G G, pass from it around small feeding pulleys L L, and from them around small pulleys on the ends of the axis of the feeding rollers C C, and this gives motion to the feeding gear. The band S, gives motion to the tongueing and grooving shafts through the intermediate shaft N. The band T, gives motion to the spiral cutters on the cylinder B.

### Figure 2.




The spiral cutters may be formed in a hollow cylinder secured to a shaft or otherwise secured on the cylinder. The feeding rollers are the only kind adapted to feed into the spiral cutters. The tongueing and grooving knives, as represented in fig. 2, are of the bill hook form and are also spirally formed near their cutting edges. The combination of the breeding spiral roller with the spiral cutter is the important feature in this invention. The spiral cylinder B, can be elevated or lowered at pleasure.

Many have allowed that the spiral planer was good, but could not be used for want of a good method of feeding—this difficulty is removed by Mr. Ware, who has taken measures to secure a patent.

### Help one Another.

It is said that when the Emperor Augustus was passing through the baths at Rome on one occasion, he saw a veteran, who had fought with him, rubbing himself after bathing, against one of the columns. The emperor inquired why he had not a boy to do this ? And being told that he was poor, ordered him the means of paying one. On his next visit he saw at every column an old man rubbing himself, and on making the same inquiry he received the same reply. His rejoinder, however, was not what they expected ; for he said, "Well, gentlemen, as there are so many of you, I should advise you to rub one another." Augustus here taught them sound wisdom ; he taught them not to depend on the caprice of a patron, but to help one another.

### Singular Petrifaction.

An article in Hunt's Merchant's Magazine, descriptive of Detroit, makes mention of a most remarkable fossil, to be seen in that city. The building erected for the use of the Bank of Michigan, now in use of the government of the United States, is constructed, in part, of a species of shell limestone, brought from the island in Lake Erie, and polished for the purpose. One of the surfaces presents a section of a petrified human face and skull. In preparing the stone by the chisel, the petrification was divided from front to rear, vertically, so that it shows a profile of the face, a transverse section of the cranium, with petrified folds of the brain itself. The block from which this curiosity was obtained is of large size.

## RAILROAD NEWS.

### Internal Improvements in Virginia.

The Richmond Times says, that the late session of the Virginia Legislature was marked by the adoption of a very unusual number of measures of Internal Improvement of which it designates the following as the most important, which had passed both Houses :

" The bill for the Virginia and Tennessee Railroad makes a State subscription of three-fifths of the capital of three millions or $1,880,000.

The bill for the Blue Ridge Railroad appropriates from the treasury $100,000 annually, for three years, for the construction of a railroad and tunnel from the eastern base of the Blue Ridge, at Rockfish Gap, to Waynesborough, in Augusta ; and further, subscribes three-fifths of $150,000, or $90,000, for the extension of the railroad to Staunton.

The bill for the Alexandria and Orange Railroad, subscribes an additional fifth, viz : $180,000, for the construction of that work ; a subscription of two-fifths having been already authorized by an act of last Legislature.

Another bill authorizes the State's guaranty to the bonds of the James River and Kanawha Company to the amount of $350,000 for completing the connexion between the canal and the tide water, and of $150,000 for completing the Rivanna and South Side connexions.

Another bill appropriates $60,000 for macadamizing a portion of the Staunton and Parkersburg road.

The bills above enumerated authorize an aggregate appropriation of $2,920,000, and besides these leading measures, a large number of appropriations have been made for different turnpikes, chiefly in the western part of the State.

The Senate has rejected two important bills, which were passed by the House ; one making a three-fifths subscription of $300,000 to the Fredericksburg and Blue Ridge Railroad ; the other a three-fifths subscription of $900,000 to the Alexandria and Valley (Manasseeh's Gap) Railroad.

### Hartford and Bristol Railroad.

The grading and masonry of from fourteen to eighteen miles of railroad extending westerly from Hartford through New Britain to Bristol is to be immediately put under contract. This road is designed ultimately to be continued on to the North River, so as to connect with the Erie Railroad. Before it reaches Bristol it will cross the Canal Railroad (from New Haven to Farmington) and thus will make a connexion between New Haven and Hartford and New Haven road.

### Michigan Central Railroad.

This Railroad is 195 miles long, the average speed of the cars is 20 miles per hour. It is well conducted and ably managed.

### Raising the Steamer Missouri at Gibraltar.

Secretary Preston, it is said, has called by letter, upon Commanders Warrington, Skinner and Smith to report the name of some suitable person to proceed to Gibraltar for the purpose of making an examination into the condition of the steamer Missouri, sunk near that place some years since. Capt. George W. Taylor, of submarine-exploring fame, has been represented as a worthy person, peculiarly qualified to make the desired examination and report ; and the probability is that he will have the mission.

### Tennessee Cotton Manufacture.

The entire stock ($30,000) in a new cotton manufacturing establishment proposed to be erected near McMinnville, (Tennessee,) is subscribed for, and measures are to be taken for procuring all the requisite materials for erecting the necessary buildings. It is the intention to run 200 spindles and 60 looms.

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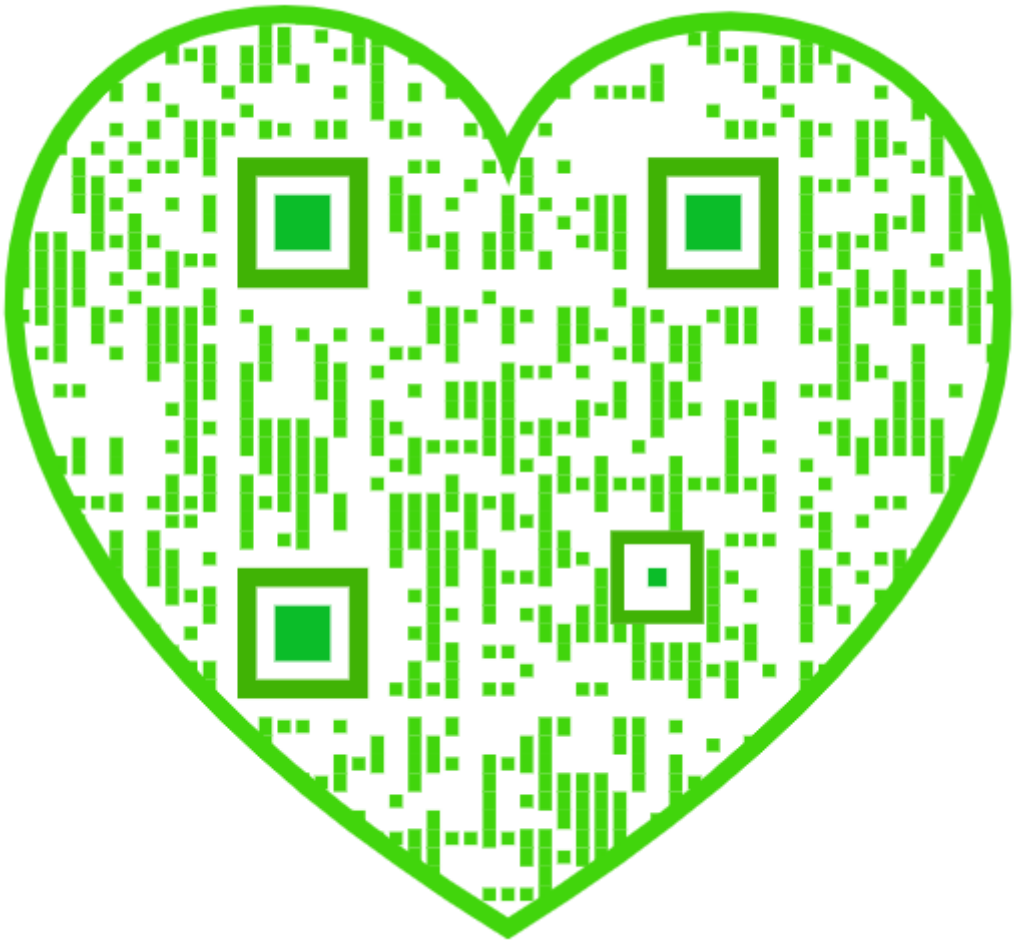

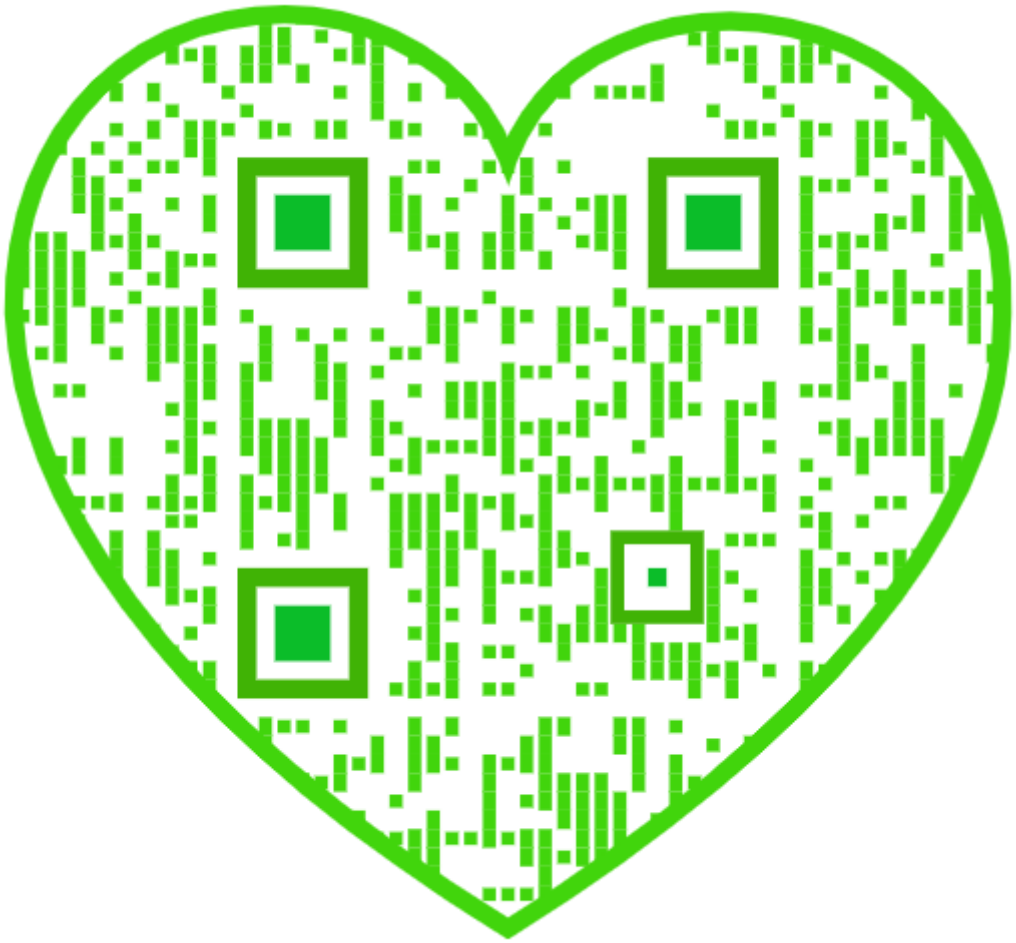

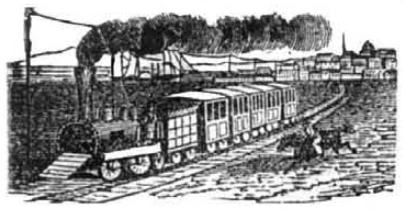

**Our Prize Essay.**

SCIENTIFIC AMERICAN OFFICE,
April 14, 1849.

EDMUND MAHER, ESQ.

*Dear Sir.*—The Committee to whom the Essays on the Patent Laws, for which we offered one hundred dollars as a prize, were submitted, have this day decided in favor of No. 9, as the meritorious applicant, which upon referring to our index we find placed opposite your name.

Enclosed we send you a check for one hundred dollars, which please acknowledge by return of mail.

Respectfully your obd't. serv'ts.,
MUNN & Co.

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MESSRS. MUNN & Co.

*Gentlemen.*—I have received yours of the 14th inst. with its enclosure, informing me that the prize of $100, offered by your firm for the best Essay on the Patent Laws, has been awarded to me by the Committee of Examination.

Gratified at this marked evidence of approval of my views and suggestions on the subject, from such a distinguished source. I shall at some future period, after the publication of my Essay, follow them up with additional suggestions of alterations in the minor details of the existing Patent Laws, through the columns of your widely circulated and useful paper.

Very respectfully, yours, &c.
EDMUND MAHER.

April 17th, 1849.

It will be observed from the above letters that the hundred dollar prize has been awarded to Edmund Maher, Esq. of Washington, D. C.

We have received 19 Essays from different parts of the country, many of which are exceedingly well written, but none of which the Committee considered so practical and so tending to advance the interest of the poor Inventor as the one selected.

We shall print several thousand extra copies of each of those numbers of the Scientific American, in which the Essay will appear and those of our readers who desire to be supplied with extra copies for distribution among their friends can be furnished at the low price of $2,75 per hundred. It is our design to furnish every paper published in the United States with copies of the Scientific American containing the Essay, and we hope those who feel an interest for the inventor and desire to enhance the progression of the Arts and Sciences and thereby promote the interests of all, will find space in their several papers to publish it. The series will commence with our next number.

**E. G. Allen's and J. P. Woodbury's Planing Machines.**

We have received communications from each of the above gentlemen respecting their Planing Machines. From their tone it is evident to us that there is a personal feeling between them, which has led us to decide against publishing anything more about the matter, (in a controversial manner,) or publishing any communication on the subject. We have no doubt but what both inventions are good, but it is not in our power to judge of the merits of either at present, as the features of distinction between them are unknown to us.—We are willing to publish an engraving and description of both inventions and this is all. It is the only honest way to decide the matter, the only way whereby the public will now be satisfied,—the only way they can judge of the matter. Our columns are not open for personal controversies, as they are of no benefit to the public and certainly of far less benefit to the parties concerned. Discussions on scientific questions—if brief and in good spirit and language, are acceptable, not otherwise. See Mr. Woodberry's advertisement on another page.

**Silk.**

"The quantity of Silk used in England alone amounts each year to more than four millions of pounds in weight—for the production of which myriads upon myraids of insects are required. Fourteen thousand millions of animated creatures annually live and die to supply this corner of the world with an article of luxury. If astonishment be excited at this fact, let us extend our view to China and survey the dense population of that widely spread region, whose inhabitants from the Emperor on his throne to the peasant in his lonely hut, are indebted for their clothing to the labors of the Silk Worm. It is truly remarked by Scott's excellent paper, that imagination fatigued with the flight, is lost and bewildered in contemplating the countless numbers which every successive year spin their slender threads for the service of man."

It is perhaps as astonishing to reflect that the manufacture of silk in this country has as yet obtained no particular importance, when compared with Cotton and Woolen fabrics.—The value of silk imported from Europe and Asia exceeds $20,000,000 annually, and no one presumes to doubt the fact that our climate is as well adapted to the production of the raw material as that of any other. The only trouble heretofore has been in producing a color equal to the Italian Silk. We are pleased to observe from some samples recently shown us, that these objections are fast being overcome, and we sincerely hope that our enterprising manufacturers will turn their attention more particularly to this important business. There is no reason why we should depend wholly upon foreign countries for supplies which annually drain so large an amount of money from us. We believe that American broadcloths are equal in point of color and finish to French. We speak more particularly of the finer qualities, such as we have examined from the manufactories of the Slater Mills at Webster, the Northampton Mills, and some other Eastern mills, which it is not necessary to mention. We introduce this subject merely to show the importance of larger experiment in branches, which claim comparatively little attention The manufacture of silk is very much neglected, in proportion to its immense demands. In some portions of the Western country, this business is gradually increasing; not however in proportion to the advance of cotton, woolen, &c. which is spreading rapidily throughout the South and West—a cheering evidence of the enterprise and resources of this rapidly growing country. We have called attention to this subject before, and will frequently do so again, as we consider ourselves to be preachers to the people on the texts of *improvements in Science, Art and Manufactures.*

**Patent Cases.**

On Monday the 16th inst. before Judge Nelson, in the U. S. Circuit Court in this city, a verdict of 6 cents was given for infringement of a patent, Alfred J. Serrill against George Crawford. The patent is for making carpenter's mouldings. This sustained the patent.

Another case of some interest decided on the same day, was that of Charles Goodwin and others against George Waring for alleged infringement of patent for design of stove ornaments. For defence it was contended that the patent was invalid, having been granted for fourteen years, whsreas a patent for designs cannot be granted for more than seven years. The Court sustained the position and a nonsuit was entered.

Here was a mistake committed by the Patent Office, but the parties themselves are to blame and more so the counsel who would come into Court with such a document. There should be some reform in the law to allow other counsel than attorneys to practice in the U. S. Circuit Court, at least in Patent cases.

**Another Case.**

On the 11th inst. in Philadelphia, before Judges Grierand Kane the oldcase of Richard S. Childs vs. Charles Lennig was brought up. This is an action for the alleged violation of a patent to J. G. Mint, for a method of burning lampblack in a confined room, without the necessity of a draft or chimney. The letters patent were assigned to plaintiff. The plaintiff alleges that in 1845 and '48, lampblack was burned in a confined room, according to Mint's method, at a factory near Bush Hill, and at another in Callowhill street, near Fairmount; that those factories turn out from twenty to sixty barrels of lampblack a week; and that the lampblack thus turned out went to the establishment of Charles Lennig. The factories were not conducted in Mr. Lennig's name, but in that of a person who subscribed himself agent. The plaintiffs say, that the factories being conducted by an agent, who did not disclose his principal, and the proceeds having been conveyed, as they alllege, to Mr. Lennig's store, that the presumption was that the latter was the principal, he being a man of substance, and, it is alleged, furnished the means.

The Plaintiffs suffered a nonsuit.

**Percussion Cap Manufactory, Frankford Philadelphia County.**

The Frankford Herald says "a purchase is about to be made by the General Government of land in the vicinity of the Frankford Arsenal, for the purpose of erecting suitable buildings for the manufactory of percussion caps. An appropriation was made at the last session of Congress, for the purchase of the land and erection of the buildings and our State Legislature have just passed an act consenting to the purchase. This purchase, we understand embraces the "Ashmead Place," adjoining the Frankford Arsenal, on the River road, about a mile from Frankford, and buildings are expected to be put up during the present season. We learn that percussion caps for the United States service will be manufactured at this place, and that it will bring into our vicinity about two hundred workmen. If this information be correct, the demand for dwelling houses in White Hall will be greatly increased and improvements accelerated. A more direct communication between the northeastern portion of this borough and White Hall in that event will be required. Meadow, Foulkred and Harrison streets, will have to be extended to meet the streets of White Hall, and this will have a direct tendency to build up and permanently advance the interests of both places.

**Cook's American Condensing Steam Engine.**

This is the title of a very handsome Chart of Explanatory Drawings of the Steam Engine, such as are used on the Hudson River and Sound Boats, representing the machine with all its internal parts laid open to the eye, each part colored to represent the metal of which it is made. References are on the Chart to a neat book of notes explaining its various pieces: the explanations are so plain that any one, although entirely ignorant of its structure beforehand, can become perfectly acquainted with the machine in half an hour. The plate is very large, being 28 by 38 inches in size, and the best adapted for machine shops, engineers, colleges, academies and steamboats we have ever seen offered to the public. Having received the approbation and praise of our first engineers and scientific professors, and being the production of a well-known draftsman of our City, it will, without doubt, become a standard work.—Published by Munn & Co. Scientific American, 128 Fulton-st. Single copies complete, $3; Map Form mounted, $3,50.

The above we copy from the New York Tribune of Saturday, April 14th. The charts above alluded to we have constantly on hand and can furnish at the price therein named.

**Errata.**

Our readers will be pleased to overlook the phonography of a letter on the second page of our last number. In future we will try and not forget what old Dominie Brown used to drill into our noddle with the soft side of the ruler, "positive good, comparative better you rascal."

**New Species of Squirrels.**

A correspondent of the Southern Planter says that on the Cold Mountain in Virginia, he has seen two species of squirrels not known in Eastern Virginia, nor perhaps any where further South. One is about the size of a large grey rat, of a dirty red color, and the other about two thirds the size of the grey squirrel, and of a scarlet red color all over.

**A Phenomena In a Hurricane.**

There is a curiosity in the possession of Dr. Beck, Professer of Chemistry in Rutger's College, New Brunswick, consisting of a pane of glass with a hole in the centre, making a circle as perfect as if drawn on mathematical principles. It was, perforated by the extraordinary hurricane which passed over New Brunswick about 16 years ago, levelling in its path a streak of houses the whole length of the town. In one of the windows this pane was discovered with a hole in it, and what is remarkable about it, is, that the perimiter of the whole is as smooth as a polished gem, so that the finger may be rubbed around it with impunity. It has the appearance of being forced out while the glass was in fusion, hence the theory to explain it, namely, that the current of air had a spiral motion in the centre of the column, the astonishing velocity of which had collected a nucleus of electricity equivalent to a voltaic pile of gigantic construction, this heat being opposed by the glass sufficiently absorbed it to prevent the communication of fire to other elements in its path, while the suddenness of contact with this amazing heat caused the perforation of a cavity so perfectly circular, and smooth. The pane was taken from the window, and now occupies a place in the Doctor's cabinet.

**Scientific Discoveries.**

Mr. E. Merriam, of N. Y. claims to have arrived at the following conclusions, which may be regarded as new in the catalogue of scientific of the present age, to wit: The connection of earthquakes with the aurora; the collapsing of steam boilers by the peculiar state of the atmosphere surrounding them; the absorption of electricity by hot iron; the regular movement of the cold in cycles; and the accumulation of saline deposits in the interior of continents where three rivers run form one centre, east, north and south to the ocean.

Wonderful if true, but as they are not fully established, we will await with calmness the climax of the discovery.

**The Mulish Balloon.**

The Flying Machine refused to fly in Boston. What a stubborn animal. We are afraid that it has got a touch of the mule in it, and peradventure the unfortunate wights that mount her to go to California, may find that she is neither to be coaxed nor drove. It was positively asserted in hand bills that it was to depart for San Francisco on the 15th inst.

"But that day has come and gone,
Not so Porter and Robjohn."

**Disastrous Conflagration.**

News from Toronto states, that city has been visited by a terrible fire which has destroyed a large part of the town. The loss is estimated by some as high as six hundred thousand dollars!

The magnificent Cathedral of St. James, erected a few years since on the same spot where stood the former Cathedral, which was destroyed by fire ten years ago, is included in the conflagration

**Death of Captain Pennoyer.**

The Charleston Courier annonnces the death of Captain James Pennoyer, at New Orleans of cholera. It will be recollected that Capt. Pennoyer was the pioneer in the enterprize of establishing steam communication between New York and Charleston. The first through trip ever made by steam between the two cities, and in fact the first steam service accomplished, was performed in the little steamer David Brown, commanded by Capt Pennoyer.

**The Debt of England.**

The National Debt of England, says Mr. Rigely Watson, in his revised arithmetic, is £772,000,000, and the aggregate capital of England and Irelaud £7,750,000,000; so that ten per cent. of the capital will easily pay off the debt. It is as if a man with a capital of £7,750 was indebted only to the amount of £772. Mr. W. would propose ten years as the time for paying the debt, and thinks it would be very easy for the owners of realized property to do it.

**To Stop the Bleeding at the Nose.**

Dr. Negrier, a French surgeon, says that the simple elevation of a person's arm will always stop bleeding at the nose. He explains the fact physiologically, and declares it a positive remedy. It is certainly easy of trial.

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### Camphor.

This immediate product of vegetation was known to the Arabs under the names of *kamphur* and *kaphur* whence the Greek and Latin name *camphora*. It is found in a great many plants, and is secreted, in purity, by several laurels; it occurs combined with the several oils of many of the *labiacæ*; but it is extracted, for manufacturing purposes only, from the *Laurus camphora*, which abounds in China and Japan, as well as from a tree which grows in Sumatra and Borneo, called in the country, *Kapour barros*, from the name of the place where it is most common. The camphor exists, ready formed in these vegetables, between the wood and the bark; but it does not exude spontaneously. On cleaving the tree *Laurus sumatrensis*, masses of pure camphor are found in the pith.

The wood of the laurus is cut into small pieces, and put, with plenty of water, into large iron boilers, which are covered with an earthen capital or dome, lined within with rice straw. As the water boils, the camphor rises with the steam, and attaches itself as a sublimate to the stalks, under the form of granulations of a gray color. In this state, it is picked off the straw, and packed up for exportation to Europe.

Formerly Venice held the monopoly of refining camphor, but now France, England, Holland, and Germany refine it for their own markets. All the purifying processes proceed on the principle that camphor is volatile at the temperature of 400° F. The substance is mixed, as intimately as possible, with 2 per cent. of quicklime, and the mixture is introduced into a large bottle made of thin uniform glass, sunk in a sand bath. The fire is slowly raised till the whole vessel becomes heated, and then its upper part is gradually laid bare, in proportion as the sublimation goes on. Much attention and experience are required to make its operations succeed. If the temperature be raised too slowly, the neck of the bottle might be filled with camphor before the heat had acquired the proper subliming pitch; and, if too quickly, the whole contents might be exploded. If the operation be carried on languidly, and the heat of the upper part of the bottle be somewhat under the melting point of camphor, that is to say, a little under 350° F., the condensed camphor would be snowy, and not sufficiently compact and transparent to be saleable. Occasionally sudden alterations of temperature cause little jets to be thrown up out of the liquid camphor at the bottom upon the cake formed above, which soil it, and render its re-sublimation necessary.

If, to the mixture of 100 parts of crude camphor and 2 of quicklime, 2 parts of boneblack, in fine powder, be added, the small quantity of coloring matter in the camphor will be retained at the bottom, and the whiter cakes will be produced. A spiral slip of platina foil immersed in the liquid may tend to equalize its ebullition.

By exposing some volatile oils to spontaneous evaporation, at the heat of about 70° F., Proust obtained a residuum of camphor; from oil of lavender, 25 per cent of its weight: from oil of sage, 12½; from oil of majoram, 10.

Refined camphor is a white translucid solid, possessing a peculiar taste and smell. It may be obtained, from the slow cooling of its alcoholic solution, in octahedral crystals. It may be scratched by the nail, is very flexible, and can be reduced into powder merely by mixing it with a few drops of alcohol. Its specific gravity varies from 0.985 to 0.996. Mixed and distilled with six times its weight of clay, it is decomposed, and yields a golden yellow aromatic oil, which has a flavor analogous to that of a mixture of thyme and rosemary; along with a small quantity of acidulous water tinged with that oil, charcoal remains in the retort. In the air, camphor takes fire on contact of an ignited body, and burns all away with a bright fuliginous flame.

Camphor is little soluble in water; one part being capable of communicating smell and taste to 1000 of the fluid. 100 parts of alcohol, spec. grav. 0.806, to dissolve 120 parts of camphor, at ordinary temperatures. It is separated in a pulverulent state, by water. Ether and oils, both expressed and volatile, also dissolve it.

When distilled with eight parts of aquafortis, camphor is converted into camphoric acid. Camphor absorbes 144 times its volume of muriatic acid gas, and is transformed into a colorless transparent liquor, which becomes solid in the air, because the acid attracts humidity, which precipiates the camphor. One part of strong acetic acid dissolves two parts of camphor.

### Industrial Pursuits---Honor to the Toil Worn Hand.

It is a painful fact, although derogatory to our character as republicans, that the grades in society are not regulated in the country, as they should be, by the true standard of merit talent, and useful in men, but very generally by a Goldometer applied by the ridiculous rules of fashion. Under our government the royal gift or patent of title and nobility cannot be conferred on individuals, that they may strut higher than their fellow-men; nor can the position of any citizen in civil life give him claim on his neighbor for more than the ordinary courtesies of good society, as taught and inculcated by the rules of decorum and good breeding. But is there not an aristocracy found in American society, whose exactions, whose exclusiveness, and whose conventional rules—both of theory and in practice—appear as ridiculous to the well-balanced and judicious mind as those of the titled and tinselled aristocracy of monarchical governments?

That this is the case, we think few will deny. That dignity, which honest industry and scientific acquirements in the mechanical arts confer upon their possessor, is not recognised to the extent it should be in our social system. The educated mechanic or the tradesman does not generally occupy that position in society to which he is righteously entitled; and, with but an exception now and then, and at particular seasons—in an election canvass or the like—he is too generally regarded as a member of an inferior grade of society. It behooves us to inquire why this false state of things exists among us. The mechanical arts have not flourished with us to such a degree as to constitute any great portion of the wealth of our section. How few eminent and educated mechanics or manufactures, in the various branches of trade, are found among us, or at least receive that encouragement and support sufficient to make a residence with us desirable or profitable.—Our boots and shoes; our hats; our furniture our cutley; our axes; yes, even our axe helves our wood-saws; our locks and hinges; our spades; our plows; and hoes, and in short, every article we use, comes from abroad.—This state of things may be in part attributable to our agricultural system—to our extensive production of cotton, which monopolizes the entire productive energies of this latitude; but the question may be fairly put, is it not also in some degree owing to causes within our power to remove?

The people of the South have, just at this time, abundant matter for serious consideration, and, among the various subjects entitled to a large share of their reflections, is the inquiry how they may best elevate and foster the mechanic and manufacturing interests in all their branches. Industry, ingenuity, enterprise, and mechanical talent, when accompanied by a sound education, such as is generally bestowed upon the youth of our country are among the chief elements of a nation's strength. And why, then, should not those engaged in bringing the elements into successful action, in their appropriate sphere, be not regarded as equal to those of any other profession in life. They are really so—yes, and superior to hundreds of drones, who, with a showy and superficial education, and the wealth of their more industrious ancestors, imply condescension in every word and look they bestow upon the industrious mechanic. This ought not so to be—these artificial distinctions of society, among intelligent and industrious citizens of an enlightened country, are inimical to our prosperity and to the interests of the republic.

The above is taken from the South Carolinian—it is above comment.

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Plato, hearing it was asserted by some persons that he was a very vicious man, "I shall take care to live so," said he, "that nobody will believe them,"

### Office of the Fly Wheel.

A piston, which is urged by the force of expansive steam, is acted upon by a continually diminishing power of impulsion. When the pressure of the steam becomes by expansion less than the load which such piston drives through the intervention of machinery, including the natural resistance of the machinery itself, then it is clear that the moving power will cease to be efficacious, and that the piston must come to rest.

The inertia of the machinery may continue the motion somewhat longer than the moment at which an equilibrium takes place between the resistance of the load and the pressure of the piston, but this effect must soon expire.

The expedient by which the expansive principle may be most conveniently extended is to use, in the commencement, steam of high pressure, and great density; such steam may allow of considerable expansion before it loses so much of its force as to be reduced to an equilibrium with the resistance to the piston.

In all cases the expansive principle evidently involves a continual variation in the impelling power of the piston.

Now it seldom happens that there is any similar variation in the resistance which the piston is required to overcome; and in that case an irregularity of action would ensue. In the commencement, the energy of the impelling force being greater than the resistance an accelerated motion would be produced; and towards the end, the impelling force becoming less than the resistance, a retarded motion would be effected. A great variety of contrivances have been suggested by mechanical inventors to equalize the varying action,—the most common and the most beautiful of which is the fly-wheel. This is a heavy wheel of metal, well centred, and turning upon its axle with but little friction, so that the force necessary to keep it in uniform motion is inconsiderable. The varying action of the piston is transmitted to this wheel—When the impulsive force is greater than the resistance of the load, the surplus is imparted to the wheel, to which it gives a slight increase of speed. Owing to the great mass of matter in the wheel, an increase of speed which is scarcely sensible absorbs an immense amount of moving force. When the impulsion of the piston by the expansion of the steam becomes less than the resistance, then the momentum of the wheel acts upon the load, and that portion of surplus force which was previously imparted to it is given back, and the wheel assists, as it were, the piston in moving the load when the latter becomes enfeebled by the extreme expansion of the steam.

The fly-wheel is thus, as it were, a magazine of force, which gives and takes according to the exigencies of the machinery. When the moving force is in excess, the fly-wheel absorbs the surplus; when the moving force is deficient, the fly wheel gives back what it absorbed.

### The History of a Glutton.

An incredible glutton, Joseph Krolonicker, died at Hefeld in the year 1771, (born at Passau) who had shown his rapacity for gormandizing in many houses at Hanover. This wonderful man as early as his third year ate stones to appease his hunger. His parents, and even his grandmother had been stone-eaters. According to the judical declaration of his wife, he was never satisfied except when he mixed stones with his food, of which he had constantly a supply about him. Yes, he was once about going to Holland, and having heard that stones were not plenty there, he took several hundred weight with him. This man was always hungry, and therefore ate the whole night. The longest interval from satiety to hunger again, was one hour and a half. He was able to consume at one meal seventeen herring, and as many quarts of beer without taking into the account an equal portion of bread. At one time he ate two calves one boiled, the other roasted, in the space of eight hours. At Brunswick, he ate at the castle, twenty-five pounds of roasted beef besides having eaten before five portions in a refectory. He also ate other things, such as metals and felt, yet he would not eat cat-fish, towards which he had an unconquerable aversion. Krolonicker, who was in his youth a soldier, when quartered, on account of his unheard of appetite, was counted as eight men. It is wonderful, but his passion for eating saved his life! for in an engagement he was struck by a bullet in the abdomen, but this being full of stones, the ball rebounded, and he was but slightly wounded. After his death it was found by dissection, that his bowels contained a multitude of metals and some flesh; also a pound and a half of stones.

### Degeneration of our Race.

The following is from the Oregon Spectator some of it is true and some not.

That the Americans, as a people, have degenerated from their ancestors in point of statue, limitation of life, and ability to endure fatigue, would seem to be a fact generally admitted. Some of the causes it may be well to notice, as it is highly important, as a nation, that we should not only have vigorous understandings, but strength of body to plan and execute any undertaking man may perform.—One of the most obvious causes of declining strength, is the sedentary life of an increasing number of our citizens, added to the fact that far too little exercise is taken in the open air. It is so ordered on our planet, that man shall acquire a living by the sweat of his brow—and it is further ordained, that the labor implied in the mandate shall invigorate his bodily powers. Another reason why we do not possess the constitutions of our ancestors, is our luxurious mode of life when compared with theirs. We use more tea, coffee, and sugar than they did, and our food is frequently seasoned to death. In fact, modern cookery is becoming a science, calculated to pamper the appetite of the indolent; leaving the victim no other excuse than pastry for becoming a gouty dyspeptic. Another palpable cause of pulmonary habits, is fashionable dressing. What tends much to weaken us—although perhaps not so considered—is the use of stoves instead of fire places for warming rooms; and I may add to this another, in the general introduction of bolting cloths into grist-mills. Andrew Loucks, who, at our interview, was in his ninety-seventh year, in answer to the question; 'why were people of your day healthier than those born at a later period?' replied, 'we ate lighter food when I was a boy than at present—such as soups; used a great deal of milk, and but little tea and coffee. We sometimes made chocolate by roasting wheat flour in a pot, though not often. But, ah!' added the old man, 'young people are now up late at nights—to run about evenings is not good, but to take the morning air is good.'

### Injury from Bleeding.

The too free use of the Lancet—which Dr. Reid called a "minute instrument of mighty mischief"—is thus condensed by Dr Brigham in his report of the Utica Lunatic Asylum to the New York Legislature:

"Many of the patients sent to this Institution, have been injured by too much bleeding and depletion before they were committed to our care. Some we think have been rendered incurable by this treatment, and we cannot forbear remarking, that in our opinion the work of Dr Rush on the "Disease of the Mind," in which directions are given to bleed copiously in maniacal excitement, has done much harm, and we fear is still exercising a bad influence and we hope no future edition will be issued without notes appended to correct the errors into which the distinguished author has fallen for want of the numerous facts which have been furnished since his time, which enable us to see the errors of our predecessors."

### Surgery.

The science of Surgery is making rapid strides towards perfection. A skillful surgeon can manufacture a respectable looking nose out of a slice of skin and flesh from the forehead, but Dr. Wildman, of Georgia, has carried the science one step forward, and has made an entire lower lip for a young lady out of a slice of the right cheek. The young lady had, through an injudicious administration of calomel, lost a portion of the lower jaw and the entire lip. She stands therefore as a living monument of the ignorance and the skill to be found in the same profession.

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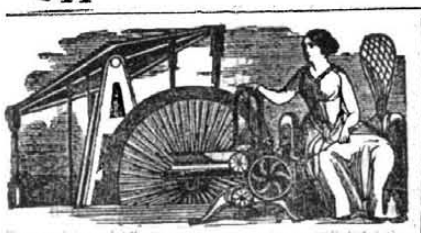


# New Inventions.

### Improved Tuyere for Forges.

Mr Samuel C. Camp, of Hartford, Ct. has made a valuable improvement on Tuyeres for forges, &c. which has been tried and found to operate with great satisfaction. Mr. Camp has taken measures to secure a patent for the improvement, which consists in making the revolving tuyere of a square rectangular form with openings of different sizes in the sides which can be operated in the most beautiful and easy manner, to regulate the draft.

The least improvement in Tuyeres is of vast importance in the iron manufacture, as upon the proper management of the tuyere depends in a great measure the success of the manufacture.

### New Stave Jointing Machine.

Mr. Lorenzo D. Benson, of Pennsylvania, has invented a new improvement for jointing staves for barrels and hogsheads. The machine consists of planes operated by a reciprocating motion, cutting or planing in both the forward and back stroke of the pitman, and which can be set to joint staves of any bulge and cut them of any bevel. Each plane is made to do both the rough and smooth at one operation, that is, it is always set to do this, but the stave has to be shifted from the rough planes to the smoother. He has taken measures to secure a patant.

### New Railroad Brake.

Mr. Benjamin Burling, of Danville, N. Y. has invented a new Brake, which is of a peculiar nature and is a good one. The brake consists of a shoe wedge placed close to the wheel on the side of the truck. When it is desired to be operated, by simply turning the wheel of the brake, as in the now common way of doing so, the wedge shoe is forced under the wheel of the car lifts it off the track at once, and with but little power exercised, this at once arrests the motion of the car.—Every person knows that the power of the wedge is one of the most simple and effectual in practical mechanics, but the secret lies in its useful application. Mr. Burlington, for aught to the contrary that we can see at present, has hit upon a good invention, and by the advice of many good engineers he has taken measures to secure a patent for it.

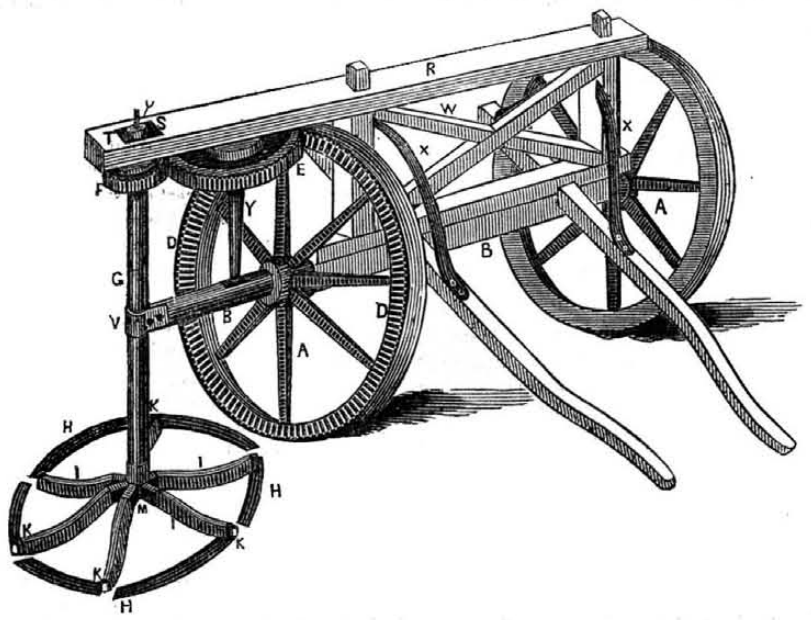
### Rotary Electro Magnetic Engine.

Mr. J. L. Pickeral, of Greenville, S. C. has invented a new and beautiful rotary engine to be propelled by electro magnetism. The only hope for a good rotary engine may be anticipated from the application of electro magnetism. The difficulty with steam rotary engines is to make them tight—this at least has been the objection to them, whether it was correct in some cases or not, we cannot positively say, but there is no packing required for an electro magnetic engine. There is always some power lost in converting a reciprocating into a rotary motion, and as a rotary motion is the best adapted to most purposes in operating machinery, such as propelling paddle wheels and shafting, it is no wonder that much ingenuity has been, from correct reasoning, applied to discover a good prime rotary power.

### Steam Engine Brake.

A patent has just been sealed in London by Mr. J. Mills a working mechanic, and a Mr. Donisthrope, of Southgate, England, for a new improvement to arrest the motion of a steam engine in a shorter time than has ever been done before. As the patent is not yet enrolled a full description of it has not been given to the public, but we have received some information relative to its operation. It has been applied to a steam engine of 30 horse power in the Factory of Messrs. Smith and Booth Southgate, and it is thus described by an eye witness. "We were taken to one end of the spinning room when the machinery of the whole mill was in operation and the engine at full speed. A valve was then opened which admitted the atmospheric air, instantly choking the condenser, shutting off the throttle and water valves and opening the blow valves. —The instant this was done the fly wheel made only one revolution and a quarter, while in the ordinary manner of stopping an engine, it makes generally five revolutions. So complete is the simple piece of mechanism that although the whole machinery throughout the mill was stopped so suddenly, yet not a single thread was broken and all remained ready for resuming work. The machinery that accomplishes this is a safety pneumatic valve which can be placed in any room in the factory and by means of pipes can work as well as if close to the engine. If a person is caught by a belt, the machinery can thus be stopped at once, before the unfortunate person is drawn around the shaft. The invention can be applied to high pressure engines and water wheels."

## MOWING MACHINE.




This is a machine invented by Mr William Boone, of New Hope, Missouri, for cutting hay, and patented in November, 1848—and it has its whole course nearly to run yet.

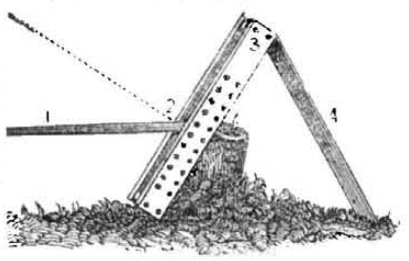
This is a perspective view of the machine and shows its operation very plainly. A A, are the wheels of the cart. B, is the axle, which extends out and by a clasp V, supports the pendant scythe shaft G. W, are diagonal braces, and X X, angular braces supporting the cross beam. One of the wheels of the wagon is constructed with cogs D D, on its outer rim. Y, is a vertical shaft running in a bearing on the axle B, and into a bearing in the cross beam R, above. E, is an intermediate wheel on the top of Y, meshing into the large cog wheel F, on the pendant shaft, to communicate motion from the wagon wheel when the wagon is drawn forward to revolve the scythe shaft G. This all will understand. The pendant shaft G, is constructed with a number of radial box shoulders in which are inserted bolts M. I, are the snathes, which are formed with clasps on their inner ends, which hook over the bolts in the shoulder boxes and form a hinge for the snathes. H, are the scythes. The shaft G, is secured in the cross beam R, by a box S, in the beam, in which revolves the cap T, which is the shoulder of the shaft and is retained by a skiver or wedge U.

When the wagon is moving forward the shaft G is revolved and the scythes have a horizontal wheel motion. There are six scythes forming segments of a circle, and they can be set to cut at different angles from the horizontal plane by wedges inserted below the ends in the shoulder boxes. When the scythes are revolved they cut the grass on their convex side and throw the swathe in towards the wheel. The great beauty about this machine is the simple manner by which the snathes are secured in the radial boxes, for the scythe has but to be turned up to be sharpened. The great difficulty with a number of such machines, has been the want of a proper compensation connexion to secure the snathes snugly and yet allow the scythes to be whetted without much trouble. This improvement of Mr. Boone, removes the evil alluded to and accomplishes what has been long desired in such a machine.

Mr. Boone is stopping in this city at present and would be happy to sell State, County or single rights of the above machine.—Letters addressed to him, at Dunlap's Hotel, New York, will receive prompt attention.

### Simple Stump Machine.

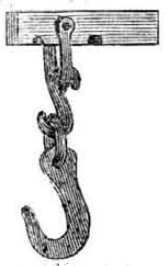
Fig. 1




This machine consists of a triangular scaffold, a lever and hook. 3, 4, is the scaffold, 4 being the brace and 3 the fulcrum frame. This fulcrum frame is made of two thick oak planks, about eight inches wide and seven feet long pinned together at the ends through a piece of four inch scantling between the planks. These planks have holes bored in them about 3 inches apart, through these holes pass two stout iron bolts across for the lever to rest upon. No. 1, is a pole about ten feet long and four inches in diameter. The inner end of the lever is banded round with a strong iron hoop and into its centre is driven a strong iron bar about two inches in diameter and two feet long, with two notches near its extremity about five inches apart; and in the middle between the said notches a hole is bored to receive the link in fig. 2. The links and hook are made of good iron as stout as may be required.

To operate this simple machine, it is set up as seen in fig. 1, with the notches of the lever resting on the cross bolts of the frame, and the hook is then hitched to the root of the stump. Now elevate the end of the lever, (which needs a short pole attached by a ring at the end to make a long one,) withdraw the left hand bolt and raise it one hole higher; now depress the end of the lever and raise the right hand bolt; and so on as high as you wish.

Fig. 2.



This machine will cost only a few dollars and to those who know anything at all about the power of a lever, we hope that they will not forget the expression of Archimedes—

"Who shook the Roman from inverted wrecks
And proud to save the Syracusian State,
Cried in his joy with grand effects elate,
(While crowds exulting shout their mirth,)
Give where to stand and I will move the earth."

### Travelling Organ.

An organ of large dimensions has been built by Mr. H. Erben of this city, for Dr. G. R. Spaulding of Albany, to accompany a travelling Circus. It is named the Apolonicon, and was driven through the streets of our city on Thursday of last week with an organist who performed some beautiful airs on it. The carriage was built by Mr. J. Stevenson, and is a splendid piece of workmanship, and so constructed with springs that the huge organ, 20 feet long, 10 feet high and 6 wide, is not in the least affected by jolting. The organ has two octaves, of pedals and 8 stops; three composition pedals to connect with keys, beside coupling stops. With this a travelling band is to hear its dead march performed *a la grande mode.*

### Improved Furnace Bars.

Mr. Geo. W. Fellows of this city, has invented an improvement in grate bars which promises to be of importance to all who use steam power. The improvement, consists in so constructing the bars as to prevent their being "burnt out," by the intense heat to which they are subjected. They differ from the common bar only in being slightly arched, and having on their upper surface, upon which the fire rests, two small, longitudinal grooves. These grooves become filled with ashes and thereby keep the bars comparatively cool.

A set of these bars have been used for some time under the steam boiler in the establishment of the New York Sun. They have endured twice as long as the ordinary constructed ribs, and are still good.

### Rice Field Irrigator.

The Charleston, S C. Evening News says that Mr. Wm. Lebby of that place has constructed a steam engine moving on wheels, the purpose of which is to render the cultivation of rice independent of the rise and fall of the tides. By means of a wheel with buckets attached, water is brought from the river to a point of discharge three feet from the level whence it is received. The engine in full action is of eight horse power, and the quantity of water which it can deliver when so worked may be estimated from the result of an experiment. With the application of less than half the full power, it discharged fifteen hundred gallons a minute. The quantity of water, and the elevation at which it can be delivered, is in proportion to the size of the wheel and the motive power.

This invention promises to be of great value to rice planters and we commend it to their attention.

### Interesting Discovery.

The Paris Correspondent of the Courier des Etats Unis, describes a marvelous discovery, which has just been made, relating to the important subject of coloring grey hair:

The new system succeeds in bringing about the internal coloring of the hair. The discovery is borrowed from the Chinese, who have succeeded in reaching and transforming by means of medicine and a peculiar diet, the liquid which colors the pilous system and giving to white and red hair a black tint which maintains itself during the continued growth It is by this method that the Chinese have been able to claim the title from the highest antiquity of the black haired nation.

M. Debay has published a treatise upon it—and as the bones of living animals have been colored red by making them eat madder, and the internal wood of trees has been changed to different hues by watering the roots with liquid metalic salts, he wonders that this discovery has not before been made by those who thus experimented. The hair and the beard belong to vegetable life, and are disposed to the same phenomena. In fact, says M. Debay, after a sufficient quantity of ferruginous salts has been introduced into the body, the circulation takes them up, the blood loaded with these substances deposites them in the follicules of the hair, which in turns pours them into the oil of the hair, and this oil, saturated with iron, becomes black, and the whole hair with it.

The above has an old appearance, and if we mistake not, is to be found in a number of the Glasgow Mechanics Magazine for 1825.—We should not like to try the process at any rate.

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NEW YORK, APRIL 21, 1849.

### Business at the Patent Office.

Our readers will perceive that the Examiners of the Patent Office are making the business fly. There are more than double the number of patents issued every week now than were issued during the corresponding weeks of 1848. Last week there were thirty six patents issued. During the corresponding week of 1848. there were only five patents issued. There are thirty eight patents in our list of this week, while on the 11th of April 1848, there were only twelve. Here we have the astonishing number of fifty seven patents issued within two weeks, over and above the number issued during the same weeks of last year. This speaks volumes for the efficiency of the Examining corps to exterminate the business that had acumulated on the files of the Patent Office before additional examiners were appointed by the law passed last year for that purpose. There are few who are aware of the many troubles experienced by the Patent Office. The amount of correspondence with it and inventors throughout our country, is enormous, and there are many very many anoyances to which the Patent Office is subject. One man writes us that he sent his model and specification to the Patent Office about six months ago but had not yet forwarded the fee $30. Well here is a case of trouble to the Patent Office. The papers are placed on file, but not in turn for examination until the fee is paid. The model, specification and Fee must all be entered upon the regular file before the application takes its turn for examination. There are a great many who write letters to the Patent Office about this and that business. No notice are taken of such letters —the Patent Office is supported, not by the funds of Government but the fees for patents, recording, drawings and copies of patents. Those who pay nothing into the Patent Treasury cannot justly expect to receive any equivalent but that which they have rendered.

A great number of people suppose that the British Patent Office is better managed than ours because the fees are higher. This is a great mistake. Our Patent Office is two centuries in advance of the London one. It is true that patents are more easily secured there. They are not examined and corrected (if there are any mistakes,) as is done at Washington, but granted if there are no just opposers to the granting of the patent. This is the reason why so many old inventions are repatented in England. In the eye of the law they are worthless. There is one thing, however, about the sustaining a patent abroad, which is commendable. Their inventors are protected, and protected well in their just rights. Our inventors are subject to more chagrin and trouble after they have secured a patent to sustain it, if there is any infringement—in fact, a poor inventor unless supported by some man of wealth, is not able to sustain his patent.—There exists, therefore, a great necessity for a thorough reform in the Patent laws. This is the only hope and rock of confidence for our inventors. As far as it regards the organization of the Patent Office, it is almost perfect. The only reform which we would wish to see instituted is a widening of the field for decision respecting what is new. The decisions are frequently too contracted in spirit, as if ingenuity was exercised to invent objections. We have no doubt but many good novel things have been rejected for "want of novelty." True, many patents have been granted for inventions that had been rejected by a first examination, but it is human nature to stand by a first opinion. Nevertheless the Patent Office is very liberal in re-examining, but great care and kindliness should be exercised on the first examination before decision. If there is a doubt, let the inventor have it in his favor.—Whatever has a tone of novelty in the invention, let it be protected freely, if it would not bring it into conflict with an existing patent, or is similar to an expired one. There is no invention, however simple, that does not cost the inventor much trouble and expense to bring it before the Patent Office.

### Labor and Capital.

It has been wisely decreed by Providence that the comforts and conveniences of our physical existence, and our mental too, should be obtained by labor. The humble fare of the peasant, the scanty furniture of his domicil, the mansion of the rich man with all its gilded appendages are produced, collected and arranged by labor. This being true, it follows as a matter of course, that the greater amount of labor that is performed, the greater amount of the necessaries, comforts and luxuries of life will be the result. All improvements in machinery tend to this result and must therefore be a benefit to the world In confirmation of this we need only refer to the difference in the dwellings and dress of the working classes at the present day, and the working classes of the fourteenth century. But the change is more apparent in the abodes of opulence than in the dwellings of those who may be termed the poorer of the people.—From this circumstance many are led to question the utility of improvements, because the advantages resulting from them are monopolized in a great measure by those who have but a small share in their production.

The apparent unjust distribution of the goods of this life, is the result of the relation between labor and capital. But what is capital in the strict sense of the word? Accumulated labor, for money is the acknowledged representative of labor. Were there no accumulated labor (capital) in our country, what would be the difference between us and the sluggard whom the wise preacher, exhorted to "go to the ant and learn to be wise, for she layeth up her food for the winter."—Capital bringeth to the possessor of it, all those ingenious contrivances which increase production, and if the capital is honestly attained who should find fault, for it is paid out again as an exchange for the mill, or the other machinery that is purchased to increase production. If a man stipulates to perform a certain amount of work for a hundred dollars that might take him 100 days to perform, and he discovers some implement whereby he can complete it in 10 days, has he not the same right still to his $100? Surely he has, and the 90 days that are now left at his disposal may be employed to produce a house to shield him from the weather, or perform any other kind of labor that will increase his comforts. No man should find fault with this. It is no doubt true that there is a disproportionate difference between the returns which labor brings and the returns of capital. This is not the fault of the capital, but the way in which it is managed. It is indeed wrong to injure any class for the sake of benefitting another class, but this is a nice question to discuss.—Capital is good, and not an evil but as it is used, and surely the greatest and most noble manner of using it, is in doing good with it. Without accumulated capital, it would be impossible to conduct the affairs of the world in the present highly civilized state of society. Without a very large capital invested, we would see no steamboat crossing the Atlantic and no railroads bearing their rich freights from lake to ocean. When capital is fairly and freely paid in exchange for labor, as it should always be, it is certainly a great element in popular elevation.

### Nail Making.

At one period all Nails were made by hand —forged out of rods of iron. Men who had learned the trade were exceedingly expert at the business, but still the price of the labor was great, as every nail had to be heated and receive a certain number of blows from the nailor. These considerations gave rise to various patented inventions for making nails by machinery. The first patent was taken out in England by a Mr. French, of Winbourne, in Stafford, in 1790. He merely employed water power to operate the hammer, enabling children to become nailors. One brought the rod from the fire, another turned it under the hammer and cut it off, when it was taken to the header to be finished. In 1792 a Mr. Clifford, of Bristol, England, made an improvement by making the nail in a steel die, The steel dies were rollers, and each roller had a cog wheel on it—the cogs of one working into the cogs of the other, both making the same number of revolutions, and one half the impress was made in the one roller and the other half in the other roller, and the two impressions formed a cavity or die of the exact form of the nail, extending lengthwise of the nail on the circumference of the rollers. A number of dies were thus made in one set of rollers.

Another plan was to cut out the nails by punches operated by machinery, in the same manner as buckles and buttons were made; and still another plan was to punch the hot nail rods with cams upwards to form the head and afterwards to anneal them in the ordinary way to soften them for clinching.

All these plans were different from our common machine cut nails, and they were intended to answer the purpose of the wrought iron clinching nail. The first American invention of the cut nail, but which had no head, is claimed to have been accomplished by Benjamin Cochran, who died in December, 1846, at Batavia, N. Y., who was once a shopmate of Eli Whitney, at New Haven, Conn. He invented his machine before the Federal Constitution was adopted. In 1790, the very year that the first English patent was taken out by Mr. French for making nails by machinery, some ingenious mechanics in America made nails by cutting them first by punches out of sheets of iron, and heading them afterwards.

In 1810 machinery was erected in the United States by the ingenious Perkins and Jonathan Ellis for cutting and heading nails at one operation. The cut nail does not clinch like the wrought iron nail, but for many purposes it is better. To drive wrought iron nails, the timber has first to be bored with the gimlet. This was too tedious a process for us Yankees to stick by—it did not suit the spirit of Jonathan, who would rather mount on a rocket than travel on terra firma by any system of Donkey locomotion. The cut nail needs no gimlet hole and a carpenter will nail up a partition with cut nails before holes could be bored in half the boards for the reception of wrought nails. Cut nails is exclusively an American invention—and except for doors and where it is necessary they should be clinched, they are better than those of wrought iron. There are a number of Cut Nail Works in the United States. At South Troy in this State, there are large establishments, and they make Spikes by the machinery of Burdon's patent also For cutting brads by machinery we know of no machine equal to that invented by Mr. Bissel of this city. In 1827 Messrs. Ledsham & Jones of Birmingham, England, invented machinery for making Brads, which is described in the Repertory of Arts, but it is inferior to Mr. Bissel's machine.

Many inquiries have been made of us respecting machinery to make wrought iron nails. We heard last year that there was such machinery in successful operation in Providence, R. I., and that the invention had been introduced into England from America.

### Goodyear's Patent Vulcanized India Rubber.

The London correspondent of the United States Gazette, says that a few years ago some specimens of Goodyear's india rubber goods were sent to England and left with a firm doing business in the north of England. It was subsequently discovered that this firm had taken out a patent for manufacturing similar articles in this country. The firm has ever since carried on a most extensive and profitable business, and now claim the exclusive right of the patent as the first inventors! Large quantities of india rubber goods have recently arrived in England from America, and have been sold here. The English patentees have notified all traders in these articles that they cannot import, purchase or sell these American manufactures, unless they first paid a tax on each article! Actions at law have already been commenced against about fifty different firms in London, and they will soon be tried. Now the Convention of Commerce of July 3, 1815, between Great Britain and the United States, subsequently extended and ratified by the British Legislature, authorises the importation into England of "any articles, the growth, produce or manufacture of the United States;" such goods are subject only to the duties specified by the Legislature, and no letters patent granted subsequently to this treaty of commerce can nullify its conditions.—The American importers interested in this question have submitted the case to the American Minister, who has promised to bring it before the Secretary of State for Foreign Affairs."

### Reduction of Tolls on the Canals.

The Canal Board of this state have recently been engaged in revising the tariff of tolls charged on property transported on the canals during the past year, and have concluded to make several important reductions on some of the leading articles, which, we doubt not, will prove alike advantageous to the interest of the State as well as to shippers. A reduction has been made on the tolls of 23 1 3 per cent on Indian Corn and Corn Meal, and 25 per cent on Barley, Oats and bloom Iron.

Last year, three mills per 1000 pounds per mile was paid on corn and corn meal; this year they will be charged two mills. Barley, oats and bloom iron paid last year four mills per 1000 pounds; this year three mills is the rate established by the Board. The reduction of one mill on corn and corn meal was agitated last year, and was agreed upon, but after more mature reflection the Board finally concluded not to make any alteration in the tolls of 1847, and they have consequently remained unchanged up to this year.

### Patent Cases.

In the U. S. Distriet Court in this city on the 13th inst., Judge Nelson on the bench, Blanchard's Gun Stock Turning Factory vs. Daniel Simmons, to recover damages for alleged violation of patent was decided and verdict rendered plaintiffs of $400.

We have the report made by Wm. Hubbell, Esq. in relation to the construction and operation of Eldridge's Last Machine, of which so many have heard and are anxious to know more about. We shall commence publishing it next week, and will conclude with Judge Kane's charge. The facts alone, without any comment by us, will be presented.

### Expansibility of Steam.

If Dalton be correct in his opinion that steam like gas, has expansive power in proportion to its compression or density, we have data to calculate the maximum power of steam. Water is found to expand nearly 1800 times into steam of atmospheric pressure, or 15 lbs. to the inch. Then, by compressing such steam to 1 1800th of its bulk, we should get it back in to water, and multiply its elastic force in the same degree, 1800X15=27000 lbs. per square inch, the maximum. Steam thus compressed into water, would instantly give out all its heat. In following the same law of elastic power in proportion to density, we find, that each expansion of steam to twice tis volume, in a steam cylinder, gives precisely the same increment of power to the piston, which must have each time doubled the distance.

The Boston Traveller of Friday last, announces the discovery of a new telescopic comet, on the Wednesday evening previous, near the Northern Crown, by Mr. Bond, of the Cambridge Observatory—being the eighth discovered by him before any information thereof had reached this country.

### Back Volumes of the Scientific American.

A few more copies of complete sets of vol. 3 of the Scientific American may be had at the office, either bound or in sheets. Price neatly bound $2 75, in sheets suitable for mailing $2. Send in your orders early if you desire them filled for we have but a few more copies left, and the number is growing less every day.

### Our London Patrons.

We are happy in being able to inform our English patrons that such arrangements have been completed with the London Patent Office that the Scientific American may hereafter be found there. Messrs. Barlow & Payne are agents at 89 Chancery Lane, and will receive remittances on account of the Scientific American from those who may desire to subscribe.

Terms—3 dollars per year and postage paid out of the United States.

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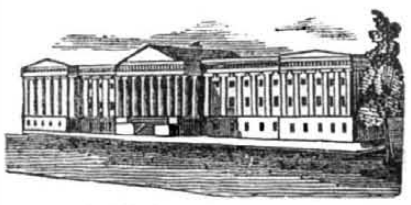

## LIST OF PATENTS.

ISSUED FROM THE UNITED STATES PATENT OFFICE,

*For the week ending April* 10, 1849.

To W. Hunt of New York City, for improvement in Dress Pins. Patented April 10, 1849.

To C. Meyer of Philadelphia, Penn., for improvement in elevating the tops of Piano Fortes. Patented April 10, 1849.

To P. Bryant of Chesterfield, Mass. for Instrument for drawing Spikes. Patented April 10, 1849.

To T. N. Shipton of Lewistown, Penn., for improvement in Threshing Machines. Patented April 10, 1849.

To S. Titcomb of Farmington, Me. for improvement in Bee Hives. Patented April 10, 1849.

To J. Carpenter of Uniontown, Penn., for improvement in Tailors' Measures. Patented April 10, 1849.

To C. Wilson of Springfield, Mass. for improvement in Machines for Dressing Stone.—Patented April 10, 1849.

To J. H. Johnson of St. Louis, Mo. for improvement in the Spring Lancet. Patented April 10, 1849.

To D. Pease Jr., of Floyd, N. Y., for improvements in Hulling Machines. Patented April 10, 1849.

To B. S. Mathews of Stamford, Conn., for improvements in Skiving Leather. Patented April 10, 1849.

To H. Diehl & C. M. Diehl of Norristown, Penn., admr's. of W. Diehl, deceased, for improved Nail Plate Feeder. Patented April 10, 1849.

To F. R. Babcock of Westfield, Mass., for improvements in Cooking Stoves. Patented April 10, 1849.

To W. S. Jewett of New York City, for improvements in Shaving Brushes. Patented April 10, 1849.

To H. Knowles of Washington, D. C. assignor to J. Levey, New York City for improvement in Planing Machines. Patented April 10, 1849.

To L. Stockwell of Sutton, Mass., for improvements in Machinery for Dressing Shingles. Patented April 10, 1849.

To A. H. Forbes, of New York City, for undetachable swinging Bottle Stopper. Patented April 10, 1749.

To H. F. Baker, of Centreville, Ind., for improvement in Churns. Patented April 10, 1849.

To J. M. Hoffman, of Buffalo, N. Y. for Folding Centre Board. Patented April 10, 1849.

To W. Snell, of Easton, Penn. for improvement in Machines for Cutting Gaiter Boots. Patented April 10, 1849.

To J. Laubereau, of Paris, Republic of France, for improved Air Engine. Patented in France October 30, 1847—in America April 10, 1849.

To T. Franck, of New York City, for improvement in Extension Tables. Patented April 10, 1849.

To J. Edgar, of Baltimore, Md. and B. Hallowell, of Alexandria, Va., for Revolving Cradle for unloading Canal Boats, or sections thereof. Patented April 10, 1849.

To W. H. Blye, of De Ruyter, N. Y., for improvements in Planes for bevel edges. Patented April 10, 1849.

To N. C. Sanford and H. C. Smith, of Meriden, Conn. for Machine for regulating the twist and diameter of Screw Augurs. Patented April 10, 1849.

To S. P. Winne, of Albany, N. Y. for Sliding Cut-off Valve. Patented April 10, 1849.

To D. Linzie, of Petersham, Mass. for improvement in Fan Chair. Patented April 10, 1849.

To H. Perry, of Pittsburg, Penn., for improved Rotary Gold Washer. Patented April 10, 1849.

To H. Law, of Wilmington, N. C., for improvements in Planing Machines. Patented April 10, 1849.

To J. M. Singer, of Pittsburg, Penn., for Machine for carving Wood or Metal. Patented April 10, 1849.

To W. Scarlet, of Newark, N. J., for Machine for making Suspender Buckles. Patented April 10, 1849.

DESIGNS

To Peter Lawson, of Lowell, Mass. for Designs for Carpets, (3 patents.) Patented April 10, 1849.

To R Cornelius & Co., assignees of J. F. Baker, of Philadelphia, Penn, for Designs for Furniture Ornaments, (2 patents.) Patented April 10, 1849.

To G. E. Waring, of Stamford, Conn., for Design for Stoves. Patented April 10, 1849

To C. J. Woolson, of Cleveland, Ohio, for Design for Stoves Patented April 10, 1849.

### Mineral Wealth of Alabama.

The Mobile Tribune says :—" We have before us a specimen of Alabama marble, taken from a quarry near Centerville, Bibb county. A company is now in existence there, with a capital of some $50,000, for the joint purpose of marble and coal mining. The specimen before us, although taken from the surface, is of most exquisite grain and color, and equal, we are assured, to the best Italian material.

In the immediate vicinity of this quarry, iron ore of great richness, bituminous coal, similar to that of Tuscaloosa, and immense quantities of limestone are found. This region is also finely timbered. Pine, cedar, oak, poplar, cherry, walnut, &c., suitable for cabinet furniture, houses, mills, steamboats, ships, &c. can be obtained in large quantities at accessible points. All of which, put into flat-boats and rafts, could be safely and rapidly sent to market. Throughout this region, too, any amount of water power, on the Cahawba rias well as its tributaries, can be used for all kinds of mills and manufactories. Neither is any portion of the Union more noted for a mild agreeable and healthy climate ; and besides, there is a sufficiency of land to produce all the breadstuffs and provision needed for a large population."

### Depth of Coal Mines.

The greatest depth at which a productive mine is worked appears to be one in New-Castle, England, 1794 feet ; though we observe in a new work, statements of a mine in Wales, worked at the depth of 2100 feet.—The minimum depth that we observe in Great Britain, is 66 feet. The average depth of the mines in Great Britain varies from 233 to 750 feet ; and to strike a eneral average, would not bring it far from 400 feet. If they undertook, as we do, to remove the earth from above the coal, it would be almost as cheap to burn carbon in the shape of diamonds as coal.

If it is remembered that this depth below the surface involves the expenses incident to raising and lowering everything that is to be used—workmen, tools, &c., together with the coal that they get ; that the water which collects in the mines in alarming quantities has to be pumped up all this distance—a work totally impossible without the aid of of the steam engine ; that the distance from fresh air involves great expense for ventilation and great danger in case of any of the thousand accidents to which these worlds under ground are exposed—if all these disadvantages and others which might be mentioned, be borne in mind, it will be seen at once how convenient comparatively is the location of our mines—so abundant near the surface—and affording such facilities for drainage as to remove most of the difficulties above referred to.

### Ice and Steam.

The ice houses are filled, and the dealers are now engaged in stacking the ice, to be covered, unless exported, hereafter. A stack of clear blue, transparent ice, of the size of a meeting house, is no ordinary sight, but is a sort of Yankee Pyramid worth going to Fresh Pond (in the neighborhood of Boston, Mass.,) to behold. To show the great rapidity with which ice is taken from the water, under favorable circumstance, we are told that Mr. Wyeth has put into his ice-house, with the aid of a steam engine and his machinery, no less than eight hundred tons of ice in one hour and a half !

For the Scientific American.

### Explosions in Steam Boilers.

Mr. Editor.—There are still a variety of opinions among both scientific and practical men respecting the real cause of steam boiler explosions. Explosions have occurred owing to the want of a sufficient quantity of water in the boiler,—the water being so low as to allow some part of the boiler to become red hot, which when cold water was admitted generated steam so rapidly as to force the boiler to pieces. Almost every person accounts for boiler explosions by this theory. No person can rebut the truthfulness of this as one prolific means of boiler explosions, still there have occurred explosions which could not in any manner be accounted for by the foregoing theory. Many boilers have exploded with plenty of water in them, or else the testimony of many respectable men must be denied. In the two separate reports made upon the explosion of the locomotive Tahconic, on the Providence, R. I. Railroad, the causes of the explosion are stated in one report to be a want of water, and in the other to arise not from a want of water, but from some cause produced by water in a spheroid state. Before an explosion should be accounted for by water in a spheroid state—the nature of that state of water should be accounted for. With plenty of water in the boiler, I cannot see how that it can assume the spheroid state of Perkins, but it can and does that of Johnston. When a vessel is put on a fire, the water forms at the bottom and around the sides in clusters of small spheres. These rise to the top one after another and burst, giving out a gas which will explode if Johnston's experiments are to be credited. Now may it not be true of water in a boiler under a high pressure that the elementary gases of it may combine with carbonic acid gas, and by some motion of the current of the steam a spark of electricity be passed through it and cause an explosion. A great deal of electricity is set free in the generation of steam, and a great number of explosions have taken place, just at the moment the engine was set in motion—the steam let off from a state of rest by touching the valve. If when the engine is stopped and the fire kept up, some of the steam, however little, was allowed to escape continually, we would not hear of so many explosions. The boilers of the steamboat Defiance that exploded below New Orleans on the 25th March were new and of Mr. Montgomery's patent. They exploded when the engine was set in motion after having been standing for some time. Now may not a great quantity of electricity have been generated and resolved gases also in the boiler, and as steam like excited glass in passing from an orifice, is in a highly positively electrical state, the gases may have been ignited and thus cause the explosion. Water is composed of oxygen, and hydrogen, but these two gases form into water only when ignited. If these two gases were resolved in the boiler by heat, and ignited by the electric spark, they would not cause an explosion but a collapse which would not happen in a boiler, as the outward pressure would be less than 15 pounds on the square inch. If carbonic acid gas be generated and mix with the two others, we have a highly explosive gas when ignited and which will account for all the phenomenon of sudden explosions. The writer of this is inclined to the opinion that carbonic acid gas, has something to do with all such accidents. He has detected it more than once in a boiler which had evaporated all its steam with the fire under it.

Every person knows the tremendous expansive power of carbonic acid gas, and it has a peculiar penetrability as mentioned by Mushat in some letters on the manufacture of steel. The object of the writer is to call the attention of engineers to this subject, as he is of the opinion that all steam under a pressure above 80 pounds contains a portion of carbonic acid gas.

Evans.

### Transplanting Evergreens.

It seems not to be very material whether evergreen trees are transplanted in April, May, or June. They may be made to live in either of these months when they are properly taken up and set ; as it is all important to take up a sod with the tree it may be as well to transplant this kind early in the season before ploughing commences.

It is not necessary to take up a long root with a fir, a hemlock, or a pine ; but it is absolutely necessary to take up a sod with the roots ; and sods will adhere to them better at this season of the year than when the earth is more dry.

There is not much risk in taking firs from good nurseries, for the multitude of fibrous roots that are found in every direction hold enough earth to insure their growth. But pines or firs taken from forests have but very few roots, and they need more care.

The bark that covers the roots of pines and other evergreens is very thin and tender, and when the trees are pulled up and set, as we set apple trees, the bark comes off, and not one tree in fifty survives. Long roots are not needed, and the trees may be taken up by cutting around at a distance of twelve inches from the trunk when that is not more than five feet in height.

These trees and clumps of earth may be set when the earth is wet, for there is not the same need of spreading out the roots and keeping them separate as there is when trees are taken up without the earth. Yet it is important in all cases to keep the earth loose, and light, and free from weeds around them.

### Devil Sticker of South America.

In many of the huts or habitations in the Indian vilages passing up the great rivers, is to be found the devil-sticker. It is of a spongy nature, and smooth skin, not unlike the large slug of England. It is brought into the hut with the fire-wood, or it may creep in unperceived. It, however, creeps up the side wall and getting on the edge of the rafters of the ceiling to which it adheres, it looks like a small ball, or more properly like the slug coiled up. It is frequently known to drop from its hold without being molested, and wherever it falls it throws out from its body five or six fangs, which are barbed like a fish-hook, and on to whatever, softer material than brick or stone it chances to fall, these fangs enter ; nor can it be removed unless by cutting the animal off, and picking the prongs out of the substance into which they are so firmly fastened. When they fall on the person who happens to sit or stand underneath, the consequence is dreadful.

Warm oil is the substance used to destroy successfully the poison of this Southern pest.

### Curious Imprisonment of a Bat.

A curious fact in Natural History occurred a short time ago in the woods of Blair Adam, Scotland A silver fir tree had been felled, which, as is very usual with that species, had separated into two stems, (about twelve feet from the ground) but they afterwards grew together again, and the tree grew in a single stem for 18 or 20 feet above the junction, which appeared to be about four feet in length, and twelve inches in diameter. When the tree was cross cut about four feet below where the junction was supposed to have commenced, a small hollow was discovered in the heart of the tree, and something was observed to flutter within it. A boy put his hand in and pulled out a large bat, one of the ears of which was cut off by the saw ; but the animal was in such a lively state, that, when thrown on the ground, it flew away over the tops of the adjacent trees. Robert Wishart the woodman, an experienced and steady man, said that the aperture from which the bat was taken was about seven inches long, and barely three inches in diameter ; and that the animal, when found, was with its head down towards the root of the tree ; that he examined the tree very carefully, but could find no communication with the external air. He thought the parts of the tree must have been growing together for six or eight years.

### Effect of Imprisonment.

The Physician one of the State Prisons in this State, in his last report says " that from a careful investigation, five years is the longest term which a convict can pass in confinement and be restored to the world with a sound mind and sound body." He thinks that after a long confinement, it would be more merciful to retain for life, than to turn them out upon the world, incapable of self-control.

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### TO CORRESPONDENTS.

"C. M. M. of Pa." "G. B. M. of Texas," "J L. P. and S. & C. of S. C."—Your funds came duly to hand and your business shall receive early attention.

"K. & P. of Ct."—Your model was received from Washington last Monday. Please remit us $20 and we will proceed with your business immediately.

"R. C. of Mass." "N. S. C. of Ct." "W B. F. of N. H." "R. S. T., D. N. F. and C. N. T. of Pa."—Your specifications and drawings have been forwarded to Washington since our last issue.

"W. W. and others of N. C."—Your drafts reached us safe this day. Below we publish reply to our enquiries in relation to the business. "Gents.—The books for the steamer of June (California 3d ship,) will open when we hear of the return of this steamer to Panama from her first trip. Respectfully,

HOWLAND & ASPINWALL."

"N. G. F. of N. H."—We shall certainly look to your interest in this matter, and trust you will obviate the objections specified in our letter. When your new model is complete forward it to this office.

"J. M. H. of ———."—We cannot express our opinion of Mr. C 's patent, having never seen it. Letters patent have been obtained since that date for —— Mills, one of which we are somewhat familiar with, patented in November 1848. If you are satisfied of its good qualities, you had better buy the interest.

"A. S. of N. J."—The objections to balloon travelling are neither new, nor founded upon any prejudice but that derived from the failure of balloonists to prove what they professed. Let scepticism be cured by proofs, an easy way to shut off objections and the only way at present.

"J. A. H. E. of N. Y."—You can never get any benefit by trying to heat by compressed air. It will not do. Take our advice and waste no money on experiments. The philosophy of the matter is known to all scientific men to be impossible.

"J. E. R. of N. Y."—Waterman B. Palmer resides in Brookfield, N. Y. His letters patent were granted in 1845.

"H. B. M. of Ohio,"—We have presented your letter to Mr. H. and find he is not disposed to buy the right. We should think your best course to pursue would be to advertise for a partner with means to assist you in the sale.

"J. S. of Va."—He cannot stop you from using the machine.

"J. M. K. of Boston."—We have already published the extent of our knowledge in regard to the machine for kneading dough—Would take pleasure in communicating any information in our possession.

"E. B. of Ind."—Your "Mechanics Companion," was forwarded in due time, and no doubt you have received it before this.

"J. G. G. of Mass."—The drawings of your improved apparatus are received and we do not hesitate in pronouncing it a subject well worthy securing by letters patent. Please send us a model of your apparatus and we can better judge of its merits; however, we understand its principles very well from your drawings and description. $5 received.

"A. S. of N. Y.—The recently patented power loom of Mr. Bigelow performs all the objects desired by you. The same principle also exists in looms for weaving ginghams in Scotland; your views are good but not new.

"N. H. S. of Boston,"—There is no patent on the Submarine Battery referred to; yon are safe.

"A. B. of Va."—We will answer you next week.

"E. J. of Mass"—$30 received. Your business will be attended to without delay.

"P. M. W. of Me."—The letter of Mr. H. to which you refer in yours of the 10th, has not come to hand.

"J. S. of Pa."—Your letter of the 14th came duly to hand with ten dollars safely enclosed. We should advise you to finish your model and have it forwarded to us at once; however if you desire it we will file a caveat immediately. Inform us by mail in regard to the matter.

"C. J. and J. M. of N. Y."—You cannot get a patent for a motion—all motions are common property. You can get a patent for the manner of producing or combining the vibratory with the rotary motion to produce a new and useful result, but not otherwise.—This would cover your invention. Philosophical principles are not the subjects of patents. The second invention is a subject for another patent, but you must confine yourselves to the particular combination of the machinery, it is not the result, but the machinery that produces it, which is patentable, except for designs, and patents in that case are only granted for ornamental works.

☞We would respectfully remind our correspondents that all communications must be post paid in order to insure prompt attention. Postmasters are authorized to frank letters containing money, or upon any matters having reference to the business of this office.

☞We must again urge upon the attention of those remitting money to us, to be particular in furnishing the State and County, as well as the town in which they reside. We received a letter from Mount Hope, with money enclosed for the Scientific American, and entered the subscriber's name at Mount Hope, N. Y. and if it is not correct we cannot take the responsibility. The Postmaster overlooked his duty, by not post-marking the letter. Mount Hope is not so familiar to us as it is to the residents of the town.

### To Our Subscribers.

We would respectfully remind those who are now receiving their papers in single wrappers that if they will exert themselves a little and obtain two, three or more, (the more the better) names with their own, it will render their paper less liable to loss and damage, through the mails. We are obliged to fold the papers for single wrappers in the smallest possible compass, and the post office clerks are more liable to overlook them in their hurry than they would if the wrapper contained three or more papers. Our subscribers, however, have always manifested a deep interest in the circulation of the Scientific American believing it to be the best publication of the kind in the country, and if it merits this high compliment, to its subscribers belong the honor of making it so. If you ask why; we answer by saying that no person reads it, until he has paid in advance for it, a compliment which we are proud of paying our readers We believe that our old patrons will continue, and we depend upon their generous aid to extend the circulation.

### Virgin Gold.

Thompson's excellent Bank Note Reporter in its last number presents two profile views of a specimen of virgin gold taken from the "dry diggins" in California. It is 96-100 fine, and weighs 2 oz. 15 dwts, value $51,17. They invite all unbelievers to call at their office, 64 Wall st. and see it. We should advise all who call to pay $2 and receive his valuable Reporter one year; they would undoubtedly save considerable "virgin gold" in that way.

# Advertisements.


Great Improvements in Planing, Tongueing and Grooving Lumber.

JOSEPH P. WOODBERRY'S PATENT PLANING MACHINE

THE Subscriber having received Letters Patent for a Stationary Cutter Planing, Tongueing and Grooving Machine, now offers for sale the right to use the same.

This machine will plane six thousand feet of Boards to an uniform thickness in one hour, producing a better finished surface than it is possible to plane by any other means now known, not excepting the hand plane, and is peculiarly adapted to plane and joint clapboards or weather boarding, and will do the work faster and better than any machine heretofore invented.

This machine is so arranged that it planes the board with an unbroken shaving the whole width and length of the material, and does not take more than two thirds the power that is required to do an equal amount of work by the rotary cutting cylinder now in common use. The construction and organization of this machine is different from any new in use.

Communications for further particulars cheerfully responded to by addressing the subscriber (post paid) One of the above planing machines may be seen in operation by calling on the patentee.

JOSEPH P. WOODBERRY,
a21 tf Border street, East Boston, Mass.

REMOVAL.

HARTSON'S First Premium Tool Manufactory will be removed on the 1st of May from No. 42 Gold street, to Nos. 58 and 60 Vesey street, where he will enlarge his business and be able to meet the great and increasing demand for his superior Turning Lathes, Planing, Drilling Machines, &c.
a21 2t G. B. HARTSON.

NOTICE.

WHEREAS certain persons have undertaken to manufacture my Patent American Elastic Safety Pins without any authority from me for so doing, thereby endeavoring to deprive me of the means of obtaining an honest living; this is to caution dealers not to purchase the Pins of any agents they may employ, as they will be liable to severe penalties for vending the same. A prosecution has been commenced by me against the said parties to recover damages for the infringement of my patent right.—The said parties are also using Cards with my father's name, James Rabbeth, on them, in conjunction with their own, pretending that they are in partnership. This is a fraud on the public. There is no such firm, as my father dissolved partnership with said parties in 1848, and forbid the parties to make use of his name after that date. Dealers are informed that all pins made by me will have the words "Manufactured by Thomas Rabbeth," on the bottom of each card, and all others are infringements on my patent. THOMAS RABBETH, Patentee,
Glastenbury, Conn.

☞Price of my Pins $3,75 per gross. a21 2t*

TO RAILROAD COMPANIES.

THE Subscriber has made application for letters patent on his self-acting Railroad Gate, designed to close up the common road in dangerous places, that nothing may intrude upon the Railroad at the time the engine or train are passing, and is now ready to negotiate with Companies, on most reasonable terms, for the erection of such Gates For further particulars, apply to A. C. Coffin, Haverhill. Mass.
a21 3t* RICHARD COFFIN.

MINIFIE'S MECHANICAL DRAWING BOOK.

THIS is one of the most valuable works ever published, for Mechanics, desiring to learn the art of Drawing. The rules are all familiarly explained, and it is well illustrated with drawings, sections and elevations of buildings and machinery, an introduction to Isometrical Drawing, and an Essay on Linear Perspective and Shadows, 46 steel plates, containing over 200 diagrams. The work is bound in a beautiful and substantial manner. Price $3.
For sale by MUNN & CO. Agents for this city.
a21 tf

TO ENGINEERS, MACHINISTS AND OTHERS—A first rate new 10 inch back geered Lathe, English make, to be sold cheap Apply at MACEY & SON'S Store, 266 South st. a21 1t*

STEAM ENGINES.

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Augusta, Maine, Oct. 28, 1848. o28 1y


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For the Scientific American.

**Poisonous Acids.—Hydrocyanic Acid.**

(*Concluded.*)

It has been stated that Prussic acid might in some instances be formed by the decomposition of the natural fluids in the human stomach. This opinion is very far from being a frivolous one, when we take into consideration that our Prussian blue is all made from animal products, horns, hoofs, &c. Some have ascribed the rapid deadly effects of Prussic acid to its action upon the nervous system If the odor of this acid makes a person fall down as if struck with apoplexy, and if a few drops make him stagger and die in an instant, no one will mistake the system upon which it operates—it surely must be the nervous.

It is barely possible that any person ever can be poisoned by Prussic acid forming on the stomach. Prussic acid consists of 26 cyanogen plus, 1 hydrogen—or of 14 nitrogen plus, 12 carbon plus, 1 hydrogen. Cyanogen is a gas of a strong and peculiar odor, resembling that of rubbed peach leaves. It is highly poisonous and unrespirable, and burns with a rich purple flame. It is composed of carbon and nitrogen, in the proportions of 12 carbon plus, 14 nitrogen, equal to 26 cyanogen. It combines with hydrogen, to produce the hydrocyanic or Prussic acid. The question has arisen, can Prussic acid ever be formed in the stomach? Or can it be emitted during the decomposition of animal and vegetable substances? This acid is generated in sensible qualities, by the action of weak nitric acid, on the volatile oils and resins; and it exists in a great variety of native combinations in the vegetable kingdom. The most familiar of these, are bitter almonds, the cherry laurel, the leaves of the peach tree, the kernels of fruits, pipes of apples, &c. The distilled water and oil of cherry laurel, are the most destructive of all narcotic poisons.

Though like alcohol, Prussic acid is a product of art, yet it will be seen, as above, to exist in some plants. It is now generally considered that this baneful acid does not pre-exist in those vegetables above named, but results from the re-action of water. It is supposed to have been proved, that it is formed out of a substance of peculiar properties, denominated *amygdalin* which is the characteristic constituent of bitter almonds. To show what probability there may be of Prussic acid being generated in the human stomach, or emitted after death from animal decomposition, it seems to be necessary to give a kind of analysis and synthesis of this poisonous compound.

Prussic acid and water contain the elements of carbonic acid, ammonia, urea, cyanuric acid, cyanille acid, oxalic acid, formic acid, melam, ammelin, melamin, azulmin, mellon, hydromellic acid, allantoin, &c. All these very different substances can be obtained from Prussic acid, and the elements of water by various chemical transformations.

It is well known by analysis, that Prussic acid and water, when brought into contact with hydrochloric or muriatic acid, are decomposed into formic acid and ammonia. The nitrogen of the Prussic acid, and a certain quantity of hydrogen of the water, unite together and form ammonia—whilst the carbon and hydrogen of the Prussic acid combine with the oxygen of the water, and form formic acid. The ammonia combines with the hydrochloric acid, and forms hydrochlorate of ammonia The formic acid and ammonia, the products of decomposition, contain the elements of Prussic acid and water, although in another form, and arranged in a different order. Thus we may analyze Prussic acid by other agents than muriatic acid, and form all the above named substances, but a desideratum is to ascertain whether any of the above named substances, are ever found in the stomach. Some of them can be detected there, while others cannot. Carbonic acid is frequently there, and so also is ammonia—but urea, cyanuric acid, oxalic acid, formic acid, &c., perhaps never. Thus it may be barely possible for Prussic acid to be generated in the stomach, and emitted during decomposition.

**Artificial Light.**

In the solar rays, three tints are so combined, that in their transmission through the azure atmosphere, they yield a perfectly colorless light. These rays are red, yellow and blue, and it is to the just and exact balance of these colors, that we owe our pure light In artificial light, however produced, the equipoise is disturbed—the red and yellow tints predominate to a great extent over the third color, the blue, and thus, all light so produced affects the natural and true color of existing objects. To this reason we have to attribute the difficulty of discriminating between delicate tints when viewed by the light of a candle.

When luminous rays are transmitted through tinted glass, it is known that those colors which are complementary to that of the glass are in part neutralized, and the transmitted light is modified according to the colour of the medium employed. Experience tells us that the excess of colour in artificial light exists in the red and yellow tints; the corrective medium, then, must be blue, in order to cause the transmitted light to become achromatic. The depth of colour (which is to be obtained from cobalt) of the glass, must depend materially on its form and thickness, and the nature of the uncorrected light; this point must rest for its complete elucidation upon the manufacturer's experience.

Artificial light to be tested, should be enclosed in a fitting box or lantern, let a direct ray fall on a white substance, as paper, side by side with a direct ray of a warm sunlight in a room to which no other ray of light has access. So long as the ray of corrected artificial light is of a warmer or ruddier quality than the ray of solar light, the achromatic power is short of its highest intensity, and therefore within the range of true achromatic powers, or further and more perfect correction. If the artificial light appears colder or bluer, the medium is too deeply tinged, and is not an achromatic but a coloured medium, applicable in no way to the improvement of artificial light by the correction of the excess of coloured rays emanating therefrom. If the qualities of the respective rays be the same, then it will be evident that the highest point has been reached, and the medium is at its highest avaliable power or state.

**Paraffine.**

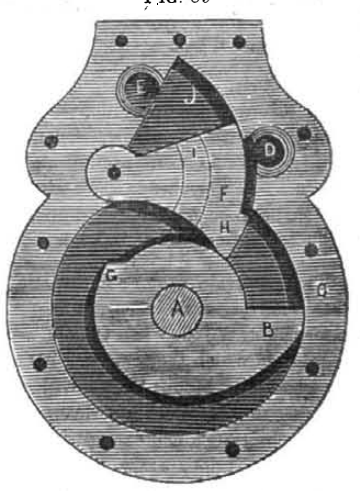
Distil beach tar to dryness, rectify the heavy oil which collects at the bottom of the receiver, and when a thick matter begins to rise, set aside what is distilled, and urge the heat moderately as anything more distills. Pyretaine passes over, containing crystalline scales of paraffine. This mixture being digested with its own volume of alcohol of 0.833, forms a limpid solution, which is to be gradually diluted with more alcohol, till its bulk becomes 6 or 8 times greater. The alcohol, which at first dissolves the whole, lets the paraffine gradually fall. The precipitate being washed with cold alcohol till it becomes nearly colorless, and then dissolved in boiling alcohol, is deposited on cooling in minute spangles and needles of paraffine. Or the above mixture may be mixed with from one quarter to one half its weight of concentrated sulphuric acid and subjected for 12 hours to digestion, at a heat of 150° F. till, on cooling, crystals of paraffine appear upon the surface. These are to be washed with water, dissolved in alcohol and crystallized. Paraffine is a white substance, void of taste and smell, feels soft between the fingers, has a specific gravity of 0.87, melts at 112° F., boils at a higher temperature with the exhalation of white fumes, is not decomposed by dry distillation, burns with a clear white flame without smoke or residuum, does not stain paper and consists of 85.22 carbon, and 14.78 hydrogen; having the same composition as olefiant gas. It is decomposed neither by chlorine, strong acids, alkalies, nor potassium; and unites by fusion with sluphur, phosphorus, wax and rosin. It dissolves readily in warm fat oils, in cold essential oils, in ether, but sparingly in boiling absolute alcohol. Paraffine is a singular solid bicarburet of hydrogen; it has not hitherto been applied to any use, but it would form admirable candles.

**History of the Rotary Engine.**

*Prepared expressly for the Scientific American.*

WILSON'S ROTARY ENGINE.

FIG. 59




This is a rotary engine invented by Mr. Allen B. Wilson, of Pittsfield, Mass.

A, is the shaft. B, the piston. C C, is the cylinder. D, the steam pipe. E, the exhaust. F, is a valve thrown into the socket I, by the piston passing under it. G, is a projection which raises the valve at H, when one third round, thus cutting off to receive the benefit of the expansion of the steam. L, is a mortice through the valve indicated by the dotted lines for the steam to exhaust through E.

This rotary engine has a very good principle in it. It is double with a plate between the two pistons, which are placed at right angles to one another in the cylinders.

**Marine Glue.**

Digests from two to four parts of caoutchouc, cut into small pieces, in thirty-four parts of coal-tar naphtha, promoting solution by the application of heat, and by agitation. The solution, when formed, will have the consistency of thick cream; to this add 62 to 64 parts of the powdered shellac, and heat the mixture over the fire, constantly stirring it until complete fusion and combination has been effected. Pour the mixture, while still hot, on plates of metal, so that it may cool in thin sheets like leather.

In using the cement, put some of it in an iron vessel, and heat it to about 248° Fah., and apply it with a brush to the surface to be joined. It is said to make a perfect union of pieces of wood, and is recommended for use in ship-building;—hence its name.

**Keene's Marble Cement.**

Gypsum is baked in the same way as for making plaster-of-paris; it is then soaked in a saturated solution of alum; again baked to the same degree as before, and ground to a fine powder. It is now in a fit state for use. On being worked in the same way as plaster-of-paris, it sets into a very hard composition which is capable of taking a high polish. It may be coloured by mixing the powder with water containing any mineral colours, instead of common water.

**To make Sea Water fit for Washing Linens at Sea.**

Soda put into sea-water renders it turbid; the lime and magnesia fall to the bottom. To make sea-water fit for washing Linen at sea, as much soda must be put in it, as not only to effect a complete precipitation of these earths, but to render the sea water sufficiently lixivial or alkaline. Soda should always be taken to sea for this purpose.

**A Cheap Blacking for Shoes.**

In three pints of small beer, put two ounces of ivory black, and one pennyworth of brown sugar. As soon as they boil, put a desert spoonful of sweet oil, and then boil slowly till reduced to a quart. Stir it up with a stick every time it is used; and put it on the shoe when wanted.

Another:—Ivory black, two ounces; brown sugar, one ounce and a half; sweel oil, half a table spoonful. Mix them, and then gradually add a half a pint of small beer.

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A certain London publisher being asked his opinion about a certain work he had issued, replied, "I have sold 5000 copies in one day." This was a conclusive argument in favor of the book. We cannot say how many copies of Minifie's work have been sold in one day, throughout the country, but its sale with us has been of an extraordinary character and it is a book that deserves it.

**Linear Perspective.**

This is a new work, by E. Jones, Esq. published by C. M. Saxton, 121 Fulton st. this city. It is to be published in monthly parts, at 25 cents each, and will thus be brought within the reach of all. It is a neat and lucid work, characterized by that perfect acquaintance with the art, which distinguishes the author.

**Guide to the Temple of Fame.**

This is a neat little volume embracing a Universal History for Schools, by Emma Willard, published by Barnes & Co. No. 51 John street. The style is clear and the thread of the history is a silver cord.

The American Phrenological Journal for April, by its able conductors, the Fowlers, is an interesting number. To those who wish to know about the great Swedenborg we commend this number.

"The Saturday Rambler," published in Boston, by Wm Simmonds & Co. is a very ably conducted, interesting family paper. It is worthy of patronage.

"Scotts Weekly," published at Philadelphia, is also an excellent paper, and we hope it will visit us more regularly. We always look for it, sometimes to our disappointment.

Mr. Ritchie, engraver of our city, has just produced an inimitable likeness of Henry Clay from a Portrait by Jarvis. It is a vigorous and spirited portrait—full of intellect and animation. The great fault which we have found with mezzotints, is their tameness—unsuited to bold display. No fault of this kind can be found in this engraving, it looks like a line engraving, and we have been told that his plates after printing 12,000 impressions exhibit no perceptible change.

Subscribers in want of any of the Mechanical works noticed in the previous numbers of the Scientific American, can order them through this office. We have and shall endeavor to oblige our patrons with any article they may need from this city, and we have only to request them to be as explicit in their communications as possible, which will save us much trouble.

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